ENVIRONMENTAL SITE ASSESSMENT

of
The Nichols Residence
Meadow Rd.
Jamaica, VT
(DEC # 93-1493)

Prepared for:

Mr. Tim Nichols
P.O.Box 258
Jamaica, VT 05343

Submitted By

STRATEGIC ANALYTICAL SYSTEMS, INC.
39 Square - Centennial Building
Bellows Falls, VT 05101

Jan. 20, 1995

John T. McCarthy
Manager of Operations

Steven L. Brackett
Geologist

ENVIRONMENTAL SITE ASSESSMENT
of the Nichols Residence
Meadow Road
Jamaica, VT

TABLE OF CONTENTS

39 SQUARE - CENTENNIAL BUILDING, BELLOWS FALLS, VT 05101
PHONE: (802) 463-0733 FAX: (802) 463-0723

BACKGROUND INFORMATION

The Nichols Residence site is located on Meadow Rd. in the town of Jamaica, VT approximately 3 miles west of the intersection of Rt. 100 and Rt. 30. On April 7, 1993 sheening was noticed along a section of the West River in the Town of Jamaica, VT. Subsequent investigation determined that the oil was coming from a seep in the bank of the river adjacent to the residence of Mr. Tim Nichols. It was assumed at that time that the source of the oil was one of the three UST's at the Nichols residence (at the time there were a 1000 gallon #2 fuel oil tank, a 2000 gallon #2 fuel oil tank and a 1000 gallon gasoline tank). On Oct. 26, 1993 the 1000 gallon and 2000 gallon #2 fuel oil tanks were removed and disposed. The Site Assessment performed of the tank excavations subsequent to removal discovered soil contamination and sheening of free product on the groundwater table. Based on this information a Site Investigation was requested by Mr. Chuck Schwer of the VT DEC, Sites Management Section in a letter dated Nov. 19, 1993. In response to this letter Mr. Nichols contracted with Strategic Analytical Systems, Inc. to perform the required work. A Work Plan/Cost Estimate was submitted to the Sites Management Section on Aug. 1, 1994.

SITE GEOLOGY AND HYDROGEOLOGY

The Nichols Residence site is located in the upper part of the West River Valley of southeastern Vermont immediately on the banks of the river. Depth to bedrock, based on drinking water wells drilled on this site and adjacent sites, is 55 - 60 feet. Soils in the immediate area consist of poorly sorted, cobbly gravels. Depth to groundwater fluctuates between 7 and 8 feet and is a function of the level of the West River. The river level is, in turn, controlled largely by releases from the Ball Mountain flood control dam located approximately 5 miles upstream from the site. The groundwater table in this area has a gradient of .75% and the direction of groundwater flow is southeast subparallel to the West River. During this investigation no evidence was found of either structural or stratigraphic impediments to flow in the subsurface (i.e. bedrock knobs, permeability barriers).

39 SQUARE - CENTENNIAL BUILDING, BELLOWS FALLS, VT 05101
PHONE: (802) 463-0733 FAX: (802) 463-0723

SCOPE OF WORK PERFORMED

Monitoring Well Installation

On September 22, 1994 Cushing and Sons, Inc., under the supervision of Strategic Analytical Systems, Inc. staff, installed four monitoring wells at the Nichols Residence site (MW-1 through MW-4). The wells were installed using an air rotary drill rig and soil samples were collected from just above the water table using a wire screened basket. Soil samples were field screened immediately for Volatile Organic Compounds ("VOC's") and soil types/conditions were recorded. Logs have been prepared for each of the new monitoring wells and are included in the Appendices of this report.

Results of Field Screening of Soil Samples

Below is a table which contains the results of the field screening performed on soil samples collected from MW-1 through MW-4. Field screening was performed according State Guidelines using a Gastech OVM calibrated to 400 ppm hexane.

	sample from water table (ppm)
MW-1	195
MW-2	98
MW-3	15
MW-4	ND

Units?

depth to samples?

Results of the Initial Round of Groundwater Sampling

Groundwater samples were collected by staff of Strategic Analytical Systems, Inc. on Oct. 20, 1994. Prior to sampling, the wells were developed using a surge block and then were purged of three well volumes of groundwater to ensure that samples were representative of actual aquifer conditions. No free product was present in any of the monitoring wells when sampled. Samples were shipped by bus to Endyne of Williston, VT for analysis by EPA Method 8020. The

39 SQUARE - CENTENNIAL BUILDING, BELLOWS FALLS, VT 05101
PHONE: (802) 463-0733 FAX: (802) 463-0723

results of the analyses performed on the groundwater samples collected from MW-1 through MW-4 are presented in the Appendices of this report. No BTEX (benzene, toluene, ethylbenzene, xylene) compounds were detected in any one of the four samples.

These results conflicted significantly with the type of results that were expected based on the soil contamination and free product (sheening) observed during both the tank removal and the installation of monitoring wells. Based on the results of this initial round of groundwater sampling Strategic Analytical Systems, Inc. collected a second, confirmatory, round of groundwater samples.

No Sheening through whom Samples?

Results of the Second Round of Groundwater Sampling

The second round of groundwater samples was collected on Dec. 6, 1994. Again, commonly accepted sample collection, preservation and bottling protocols were used including: purging the wells of three well volumes of water prior to sampling, sample preservation with HCl and zero headspace bottling for volatile organics samples. The samples were delivered to Endyne of Williston, VT, on the afternoon of Dec. 6, 1995. The analytical results for the second round of samples confirmed the results of the first. No BTEX compounds were detected in any of the samples. Following the receipt of the results of the second round of samples it was decided to run a Total Petroleum Hydrocarbon analysis by EPA Method 8100 to determine whether there were any heavier organic compounds in the samples. This analysis was performed on Dec. 21, 1994. The samples from MW-2, MW-3 and MW-4 did not contain detectable quantities of petroleum hydrocarbons. The sample from MW-1 contained a trace of petroleum hydrocarbon but the concentration was too low to quantify.

RECEPTOR ANALYSIS

Potential receptors of the contamination present at the Nichols residence site consist of 1) the drinking water supply for the site and for adjacent sites, 2) the Nichols Residence building, 3) soils and groundwater of this site and adjacent sites as well and 4) the West River which is immediately

39 SQUARE - CENTENNIAL BUILDING, BELLOWS FALLS, VT 05101
PHONE: (802) 463-0733 FAX: (802) 463-0723

adjacent to the area of soil contamination.

Visual inspection and field screening of vapors conducted during this study did not indicate any impact to the Nichols residence building or to the West River. Clearly the soil under a portion of the site has been impacted but it has not migrated offsite and has not impacted the soil or groundwater of adjacent sites.

The drinking water supply for the site is located approximately 150' upgradient from the area of soil contamination. As reported in the Site Assessment prepared by Tri-S Environmental Consulting and dated Oct. 29, 1993, there are 58 private residences with a .5 mile radius however only six of these are downgradient of the site. The site which is clearly at the greatest risk of impact is the Charles and Freda Edgergon residence which is served by a private drinking water well located approximately 500' down gradient of the site. Due to the apparent lack of groundwater impact in the immediate area of the soil contamination neither well was sampled for analysis.

CONCLUSIONS

Based on the data collected in this Site Investigation Strategic Analytical Systems, Inc. concludes the following:

- As the result of a release or releases of #2 fuel oil a portion of the soil at the site has become saturated with free product and as such meets the standards for treatment in situ as set out in Section III.A.4 of the Vermont Agency of Natural Resources Guidelines for Handling Petroleum Contaminated Soil (dated 8/3/92).

- Based on the Site Assessment report for this site and the work conducted for this study it is the opinion of Strategic Analytical Systems, Inc. that the source of the #2 fuel oil release or releases were the 2 fuel oil UST's removed from the site during Oct. of 1993.

39 SQUARE - CENTENNIAL BUILDING, BELLOWS FALLS, VT 05101
PHONE: (802) 463-0733 FAX: (802) 463-0723

adjacent to the area of soil contamination.

Visual inspection and field screening of vapors conducted during this study did not indicate any impact to the Nichols residence building or to the West River. Clearly the soil under a portion of the site has been impacted but it has not migrated offsite and has not impacted the soil or groundwater of adjacent sites.

The drinking water supply for the site is located approximately 150' upgradient from the area of soil contamination. As reported in the Site Assessment prepared by Tri-S Environmental Consulting and dated Oct. 29, 1993, there are 58 private residences with a .5 mile radius however only six of these are downgradient of the site. The site which is clearly at the greatest risk of impact is the Charles and Freda Edgerton residence which is served by a private drinking water well located approximately 500' down gradient of the site. Due to the apparent lack of groundwater impact in the immediate area of the soil contamination neither well was sampled for analysis.

CONCLUSIONS

Based on the data collected in this Site Investigation Strategic Analytical Systems, Inc. concludes the following:

- As the result of a release or releases of #2 fuel oil a portion of the soil at the site has become saturated with free product and as such meets the standards for treatment in situ as set out in Section III.A.4 of the Vermont Agency of Natural Resources Guidelines for Handling Petroleum Contaminated Soil (dated 8/3/92).

- Based on the Site Assessment report for this site and the work conducted for this study it is the opinion of Strategic Analytical Systems, Inc. that the source of the #2 fuel oil release or releases were the 2 fuel oil UST's removed from the site during Oct. of 1993.

- Neither of the two rounds of groundwater sampling and analysis conducted during this study indicate that the BTEX levels in the groundwater of the site are elevated above Vermont Groundwater Enforcement Standards.

- The lack of groundwater contamination in association with extensive and significant soil contamination may be the result of low residence times in the high hydraulic conductivity native soils found at the site.

- The only potential receptor which has been impacted to date by the #2 fuel oil contamination discussed in this report is the soil of the site.

RECOMMENDATIONS

Although the soil under a portion of the site is saturated with #2 fuel oil it does not appear (as of the date of this report) that the groundwater of the site has been impacted. As such, the Nichols Residence site does not currently meet the criteria for proceeding to Corrective Action. However, in light of the presence of heavy sheening on both soil and groundwater and the proximity of private drinking water supplies, it is the recommendation of Strategic Analytical Systems, Inc. that a program of monthly monitoring be instituted. This program should consist of 1) collection of water samples from the drinking water wells at the Nichols site and the Edgergon site as well as from MW-1 through MW-4, 2) analysis of the drinking water samples by EPA Method 524.1, 3) analysis of the groundwater samples by EPA Method 8020, 4) field screening of the vapors from within MW-1 through MW-4 and from the Nichols Residence building and 5) reporting of these results. In addition to analytical results the report should contain appropriate recommendations for the scope of future work to be performed at the site.

Should have been done w/ Receptor Assessment

LIMITATIONS

The findings set forth in this report are strictly limited in time and scope to the date of evaluation.

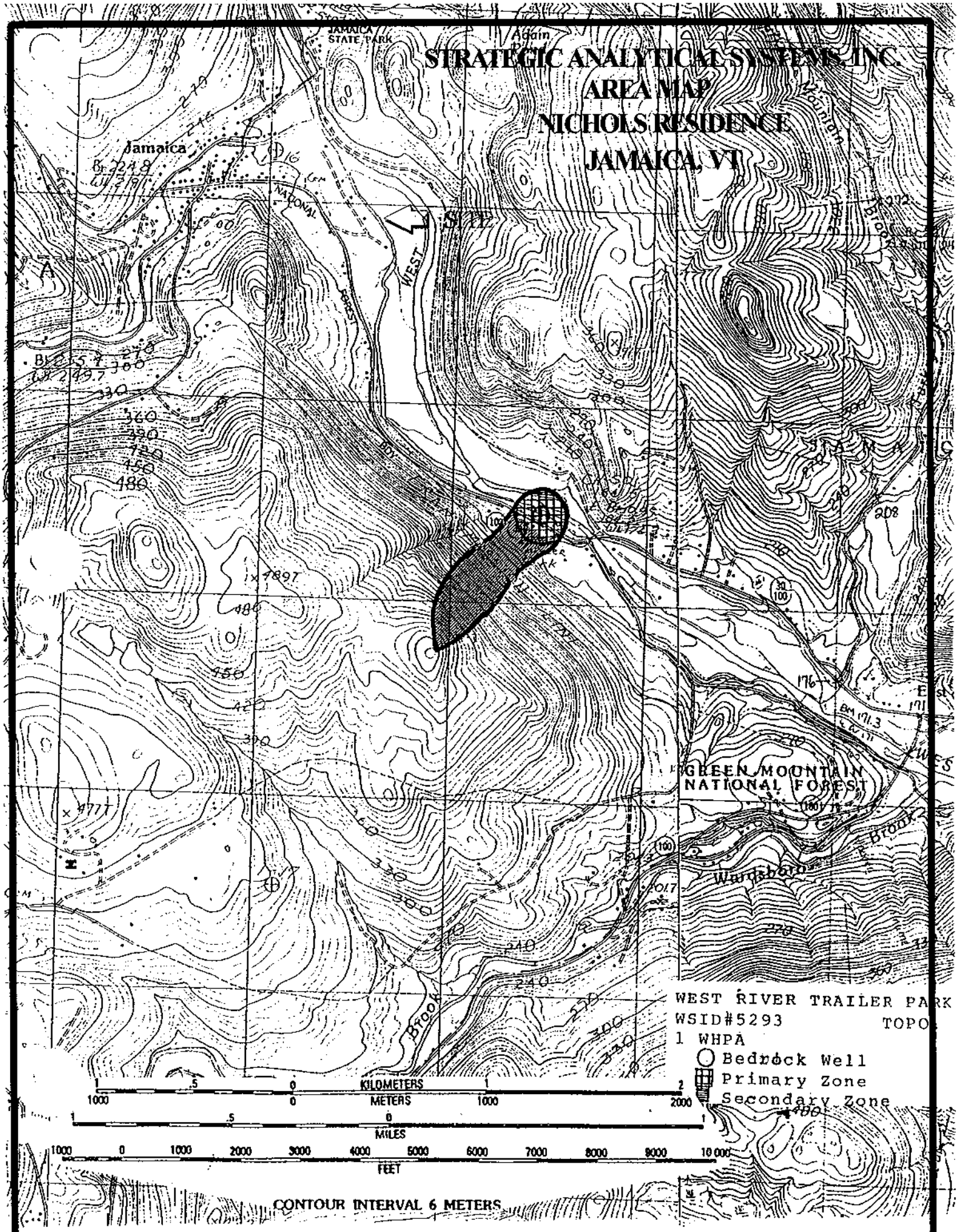
39 SQUARE - CENTENNIAL BUILDING, BELLOWS FALLS, VT 05101
PHONE: (802) 463-0733 FAX: (802) 463-0723

The conclusions presented are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed upon services.

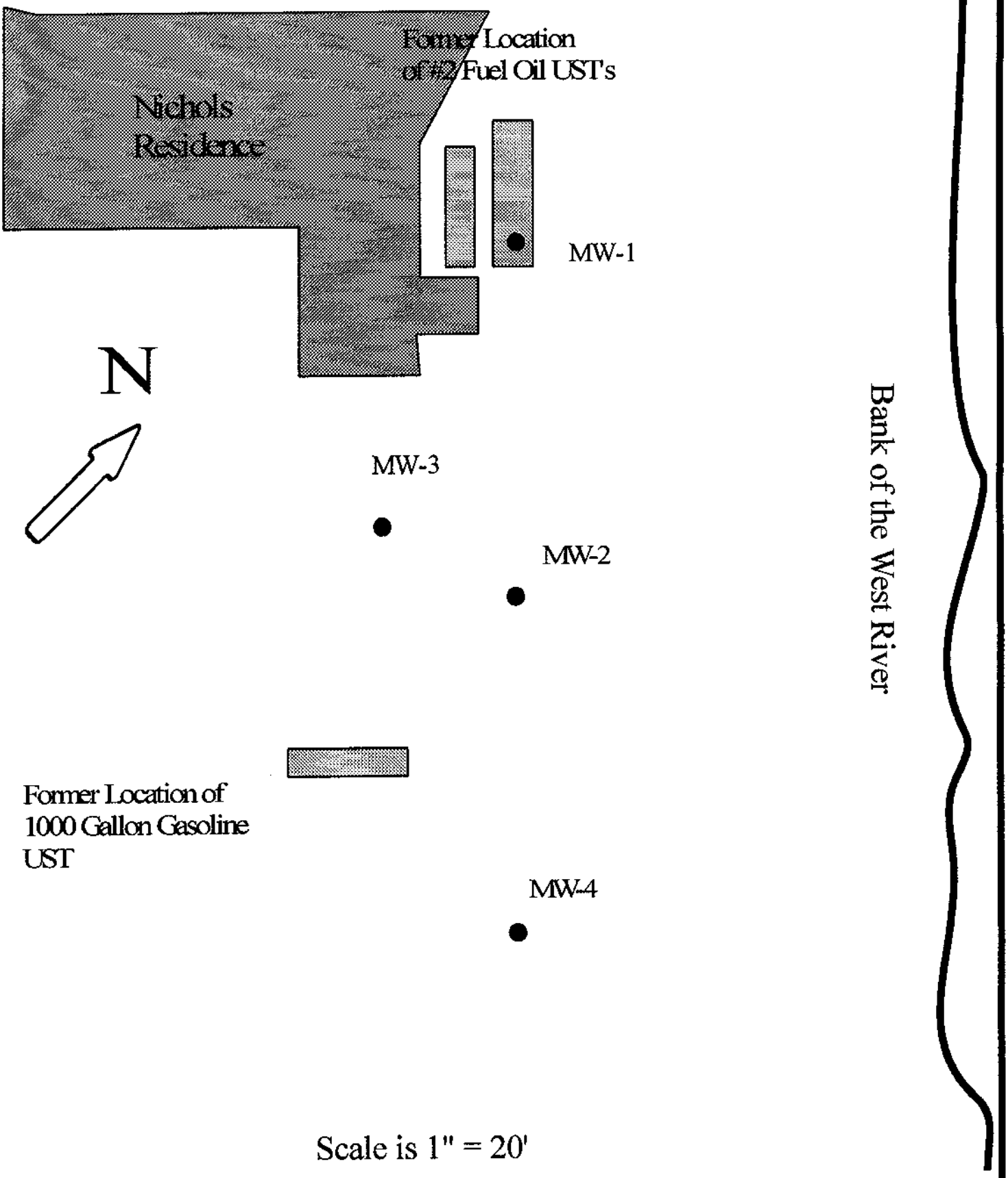
WP51\document\Nichols.01r

39 SQUARE - CENTENNIAL BUILDING, BELLOWS FALLS, VT 05101
PHONE: (802) 463-0733 FAX: (802) 463-0723

STRATEGIC ANALYTICAL SYSTEMS, INC.
AREA MAP
NICHOLS RESIDENCE
JAMAICA, VT



STRATEGIC ANALYTICAL SYSTEMS, INC.
SITE PLAN
NICHOLS RESIDENCE
JAMAICA, VT



Scale is 1" = 20'

NOV 01 1993

TRI-S
ENVIRONMENTAL CONSULTING

205 Main Street
Brattleboro, VT 05301

(802)254-3677 (24 hrs.)
(802)254-7630 (FAX)

October 29, 1993

Marc Coleman
Management and Prevention Section
VT ANR HMMD
103 South Main St/West Bldg
Waterbury, VT 05671-0404

RE: Nichols Tank Pull, Jamaica, VT

Dear Mr. Coleman:

I am writing regarding the tank pull performed at the above referenced site in Jamaica, Vermont. TRI-S, Inc. Environmental Consulting (TEC) was contracted to provide oversight during the removal of one 1,000 gallon heating oil underground storage tank (UST) and one 2,000 gallon heating oil UST on the Nichols property on October 26, 1993. The following observations were made:

- The Timothy Nichols residence is located on Meadows Road on the east side of Route 30 in Jamaica, Vermont. Adjacent properties are all residential. According to Mr. Nichols, two separate incidents occurred which may have contributed to the contamination found. In 1990, the Johnson Company overfilled the 1,000 gallon UST, spilling an unknown quantity of #2 fuel oil on the ground and eventually killing the plants in the affected area. Approximately 3 feet of soil was removed at that time and the plants were replaced at the oil company's expense. In the spring of 1993, a leak was reported to the VT DEC. A visible sheen was noted on the river and the 2,000 gallon UST was pumped out. The tank pulls described herein were performed at the request of the VT DEC.

- Excavation and transportation services were provided by Brown's Country Services. TEC was contracted to screen soils with a Thermo Environmental Instrument Organic Vapor Meter (OVM) Model 580B according to State of Vermont protocol. The OVM was calibrated to isobutylene.

Branch Office:
25 Pinney Street, Ellington, CT 06029 (203)875-2110 (24 hrs.)
Fax: (203)875-8587 (24 hrs.)

- The actual location of the tanks (as shown in the enclosed diagram) is on the northeast side of the house adjacent to a berm at the top of an embankment leading to the West River. The river is 50 feet from the house and the berm is 30 feet from the house. The soil consists of medium to coarse sand with some silt and gravel to a depth of 5 feet over a layer of cobbles and boulders. Excavation of the tank area covered approximately 200 square feet at a depth of 8 feet. Excavation from 6 - 8 feet was to find the vertical extent of contamination and did not cover the full area excavated around the tank. Soil screening locations are shown in the table below and ranged from 1.3 to 208 ppm. Groundwater was encountered at a depth of 8 feet below the 2,000 gallon tank labelled T_2 on the attached diagram. A sheen was noted in all three locations under this tank. Soil under the 1,000 gallon tank (labelled T_1 on the same diagram) was excavated to a maximum depth of 7 feet to avoid undermining the building foundation. As readings on the diagram indicate, OVM readings did not diminish at depth. After a telephone conversation with Richard Spiese of VT DEC Sites Management Section (SMS) on October 26, all soil was backfilled and a truckload of clean gravel was used to fill the pit. Three test pits southeast of the tanks were excavated and the soils were screened with the OVM to help determine the horizontal extent of contamination in the downgradient direction. The pits are shown on the enclosed diagram and are labelled P_1, P_2, and P_3, respectively. Groundwater was encountered in all three pits, with a sheen in the first two but not the third. The 1,000 gallon UST was in fair condition with surface rust and some pitting. The 2,000 gallon UST was in poor condition with surface rust and heavy pitting. One seam appeared to be incompetent and may have caused the release to the river in the spring of 1993.

- Sensitive receptors may include the West River, although no odor, staining, or sheen appeared on the bank or the surface water in the area downgradient of the original release. The Nichols well is upgradient approximately 150 feet. A copy of a portion of the USGS topographic map (Jamaica Quadrangle, 7.5 Minute Series) is enclosed to show the site location and all private wells within a 1/2 mile radius of the site. As shown, approximately 58 residences are within the distance, although the majority are either upgradient or >1/4 mile away.

- One 1,000 gallon gasoline UST remains in use on the property and one 300 gallon aboveground storage tank (AST) is no longer used. One 275 gallon heating oil AST temporarily replaced the heating oil USTs. Mr. Nichols plans to permanently store heating oil in two 275 gallon ASTs located the garage.

Table 1

Tank/Test Pit	Sample Location	Depth in Feet	OVM Reading (in ppm)	Notes
T1	center bottom	6.5	76.0	
T1	west corner	6.0	9.0	
T1	south corner	6.0	81.0	
T1	northwest end	7.0	37.0	
T1	northeast sidewall	5.0	83.0	
T1	southeast end	6.5	103.0	
T2	northwest end & sides composite	5.0	15.0	
T2	same as above	6.0	9.6	
T2	middle & sides composite	6.0	5.4	
T2	center bottom	8.0 (GW)	126.0	sheen on stones and groundwater
T2	middle sides & bottom composite	7.0	38.0	
T2	northwest bottom	8.0 (GW)	195.0	sheen on stones and groundwater
T2	southeast end	7.5	114.0	saturated with sheen on stones
P1	southeast of T2	6.0	45.3	
P1		7.0	28.0	
P1		7.5	68.0	
P1		8.0	178.0	damp
P1		8.5 (GW)	208.0	saturated with oil, sheen on stones & groundwater
P2	southeast of P1 & east of corner of house	5.0	6.8	
P2		6.0	94.8	
P2		8.0	115.0	
P2		8.5 (GW)	166.0	sheen on stones & groundwater
P3	southeast of P2	4.5	1.3	
P3		6.0	112.0	
P3		7.5 (GW)	72.0	no sheen at groundwater

If you have any further questions regarding this matter, please contact me at 1-800-359-3677.

Sincerely,
TRI-S, Inc. Environmental Consulting

Colin Blazej
Environmental Technician

Enclosures

cc: Timothy Nichols

STRATEGIC ANALYTICAL SYSTEMS, INC.

BORING LOG

PROJECT:	Nichols Residence	**Hole Diameter:**	4.25"
LOCATION:	Jamaica, VT	**Screen Diameter:**	2.0"
DATE DRILLED:	Sept. 22, 1994	**Casing Diameter:**	2.0"
WELL NUMBER:	MW-1	**Slot Size:**	.020"
Drilling Company:	Cushing and Sons	**Total Depth:**	13'
Driller:	Don	**Screen Length**	10'
Drilling Method:	Air Rotary	**Casing Length:**	3'
Logged By:	Brackett	**Type:**	2'Sch. 40 PVC

DEPTH (feet)	Well Materials	Well Schematic	Blows/6" OVM Readings	Lithology Notes (texture, color, size)	DEPTH (feet)
0			Roadbox		0
			Bentonite Seal		
				Topsoil	
2.5					2.5
			Coarse, Sorted		
			Sand		
				Gravelly, Cobbly	
				Coarse Sand	
5					5
				Gravelly, Cobbly	
				Coarse Sand	
7.5					7.5
				Approx. Water Table	
				195 ppm	
10					10
				Gravelly, Cobbly	
12.5					12.5
			Well Total Depth 13'		
15					15

STRATEGIC ANALYTICAL SYSTEMS, INC.

BORING LOG

PROJECT:	**Nichols Residence**	**Hole Diameter:**	**4.25"**
LOCATION:	**Jamaica, VT**	**Screen Diameter:**	**2.0'**
DATE DRILLED:	**Sept. 22, 1994**	**Casing Diameter:**	**2.0'**
WELL NUMBER:	MW-2	**Slot Size:**	**.020"**
Drilling Company:	**Cushing and Sons**	**Total Depth:**	**13'**
Driller:	**Don**	**Screen Length**	**10'**
Drilling Method:	**Air Rotary**	**Casing Length:**	**3'**
Logged By:	**Brackett**	**Type:**	**2'Sch. 40 PVC**

DEPTH (feet)	Well Materials	Well Schematic	Blows/6" OVM Readings	Litholgy Notes (texture, color,size)	DEPTH (feet)
0			Roadbox		0
			Bentonite Seal		
				Topsoil	
2.5					2.5
			Coarse, Sorted		
			Sand		
				Gravelly, Cobbly	
				Coarse Sand	
5					5
				Gravelly, Cobbly	
				Coarse Sand	
7.5					7.5
				Approx. Water Table	
				98 ppm	
10					10
				Gravelly, Cobbly	
12.5					12.5
			Well Total Depth 13'		
15					15

STRATEGIC ANALYTICAL SYSTEMS, INC.

BORING LOG

PROJECT:	Nichols Residence	**Hole Diameter:**	4.25"
LOCATION:	Jamaica, VT	**Screen Diameter:**	2.0'
DATE DRILLED:	Sept. 22, 1994	**Casing Diameter:**	2.0"
WELL NUMBER:	MW-3	**Slot Size:**	.020"
Drilling Company:	Cushing and Sons	**Total Depth:**	13'
Driller:	Don	**ScreenLength**	10'
Drilling Method:	Air Rotary	**Casing Length:**	3'
Logged By:	Brackett	**Type:**	2'Sch. 40 PVC

DEPTH (feet)	Well Materials	Well Schematic	Blows/6" OVM Readings	Litholgy Notes (texture, color,size)	
0			Roadbox		0
			Bentonite Seal		
				Topsoil	
2.5					2.5
			Coarse, Sorted		
			Sand		
				Gravelly, Cobbly	
				Coarse Sand	
5					5
				Gravelly, Cobbly	
				Coarse Sand	
7.5					7.5
				Approx. Water Table	
				15 ppm	
10					10
				Gravelly, Cobbly	
12.5					12.5
			Well Total Depth 13'		
15					15

STRATEGIC ANALYTICAL SYSTEMS, INC.

BORING LOG

PROJECT:	Nichols Residence	**Hole Diameter:**	4.25"
LOCATION:	Jamaica, VT	**Screen Diameter:**	2.0"
DATE DRILLED:	Sept. 22, 1994	**Casing Diameter:**	2.0"
WELL NUMBER:	MW-4	**Slot Size:**	.020"
Drilling Company:	Cushing and Sons	**Total Depth:**	14'
Driller:	Don	**Screen Length**	10'
Drilling Method:	Air Rotary	**Casing Length:**	4'
Logged By:	Brackett	**Type:**	2'Sch. 40 PVC

DEPTH (feet)	Well Materials	Well Schematic	Blows/6" OVM Readings	Lithology Notes (texture, color, size)	DEPTH (feet)
0			Roadbox		0
			Bentonite Seal		
				Sand w/ Small Pebbles	
2.5					2.5
			Coarse, Sorted		
			Sand		
				Gravelly, Cobbly	
				Coarse Sand	
5					5
				Gravelly, Cobbly	
				Coarse Sand	
7.5					7.5
				Approx. Water Table	
				0 ppm	
10					10
				Gravelly, Cobbly	
12.5					12.5
			Well Total Depth 14'		
15					15

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Strategic Analytical Systems, Inc.
PROJECT NAME: Nichols Residence
REPORT DATE: October 31, 1994
DATE SAMPLED: October 20, 1994

PROJECT CODE: STAN1987
REF.#: 66,489 - 66,492

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody did not indicate sample preservation.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Strategic Analytical Systems, Inc.
PROJECT NAME: Nichols Residence
REPORT DATE: October 31, 1994
DATE SAMPLED: October 20, 1994
DATE RECEIVED: October 25, 1994
DATE ANALYZED: October 28, 1994

PROJECT CODE: STAN1987
REF.#: 66,489
STATION: Monitoring Well #1
TIME SAMPLED: 9:30
SAMPLER: S. B.

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 99%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Strategic Analytical Systems, Inc.
PROJECT NAME: Nichols Residence
REPORT DATE: October 31, 1994
DATE SAMPLED: October 20, 1994
DATE RECEIVED: October 25, 1994
DATE ANALYZED: October 29, 1994

PROJECT CODE: STAN1987
REF.#: 66,490
STATION: Monitoring Well #2
TIME SAMPLED: 9:30
SAMPLER: S. B.

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 98%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 6

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Strategic Analytical Systems, Inc.
PROJECT NAME: Nichols Residence
REPORT DATE: October 31, 1994
DATE SAMPLED: October 20, 1994
DATE RECEIVED: October 25, 1994
DATE ANALYZED: October 29, 1994

PROJECT CODE: STAN1987
REF.#: 66,491
STATION: Monitoring Well #3
TIME SAMPLED: 9:30
SAMPLER: S. B.

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 99%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Strategic Analytical Systems, Inc.
PROJECT NAME: Nichols Residence
REPORT DATE: October 31, 1994
DATE SAMPLED: October 20, 1994
DATE RECEIVED: October 25, 1994
DATE ANALYZED: October 29, 1994

PROJECT CODE: STAN1987
REF.#: 66,492
STATION: Monitoring Well #4
TIME SAMPLED: 9:30
SAMPLER: S. B.

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 99%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

STAT1967

Strategic Analytical Systems, Inc.
39 Square - Centennial Building
Bellows Falls, VT 05101
Phone: (802)463-0733 Fax: (802)463-0723

FILE COPY

CHAIN OF CUSTODY

Company Name	Project No.	Project Name	Turn Around Time	Due Date
Strategic Analytical	VIC-CT-001	Nichols Residence	Standard	11/15/94

Contact Person	Address	City	State	Zip	Telephone
Steve Brackett	As Above				(802)463-0733

Sample I.D	Date	Time	COMP	GRAB	MATRIX	Station Location/Source of Sample	No. of Containers	Analysis Required: 8020 w/ TTHE	
Nichols-									
CT001.1	10/20/94	9:30 a.m.		✓	W	Monitoring Well #1	2	✓	—
CT001.2	"	"		✓	W	Monitoring Well #2	2	✓	—
CT001.3	"	"		✓	W	Monitoring Well #3	2	✓	—
CT001.4	"	"		✓	W	Monitoring Well #4	2	✓	—

Matrix: A-Air C-Compost D-Diluent DW-Drinking Water S-Soil SL-Sludge WW-Wastewater

Sampler Type: Teflon Bailer Sampler's Signature: [signature] Special Conditions:

Special Remarks/Requests
Please fax results. Note: We have held these samples since last Thursday.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	10/24/94 5:30PM	[signature]			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Strategic Analytical Systems, Inc.
PROJECT NAME: Nichols Residence
REPORT DATE: December 13, 1994
DATE SAMPLED: December 6, 1994

PROJECT CODE: STAS1609
REF.#: 68,406 - 68,409

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody did not indicate sample preservation.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Strategic Analytical Systems, Inc.
PROJECT NAME: Nichols Residence
REPORT DATE: December 13, 1994
DATE SAMPLED: December 6, 1994
DATE RECEIVED: Not Indicated
DATE ANALYZED: December 12, 1994

PROJECT CODE: STAS1609
REF.#: 68,406
STATION: Monitoring Well #1
TIME SAMPLED: 12:00
SAMPLER: Steve Brackett

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 99%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Strategic Analytical Systems, Inc.
PROJECT NAME: Nichols Residence
REPORT DATE: December 13, 1994
DATE SAMPLED: December 6, 1994
DATE RECEIVED: Not Indicated
DATE ANALYZED: December 12, 1994

PROJECT CODE: STAS1609
REF.#: 68,407
STATION: Monitoring Well #2
TIME SAMPLED: 12:00
SAMPLER: Steve Brackett

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 99%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Strategic Analytical Systems, Inc.
PROJECT NAME: Nichols Residence
REPORT DATE: December 13, 1994
DATE SAMPLED: December 6, 1994
DATE RECEIVED: Not Indicated
DATE ANALYZED: December 12, 1994

PROJECT CODE: STAS1609
REF.#: 68,408
STATION: Monitoring Well #3
TIME SAMPLED: 12:00
SAMPLER: Steve Brackett

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 98%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Strategic Analytical Systems, Inc.
PROJECT NAME: Nichols Residence
REPORT DATE: December 13, 1994
DATE SAMPLED: December 6, 1994
DATE RECEIVED: Not Indicated
DATE ANALYZED: December 13, 1994

PROJECT CODE: STAS1609
REF.#: 68,409
STATION: Monitoring Well #4
TIME SAMPLED: 12:00
SAMPLER: Steve Brackett

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 98%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

Strategic Analytical Systems, Inc.
39 Square - Centennial Building
Bellows Falls, VT 05101
Phone: (802)463-0733 Fax: (802)463-0723

Pattern in Log

CHAIN OF CUSTODY

FILE COPY
Sent Via UPS Transit
To Enviroscience Lab 12/6/94

Page 1 of 1

Company Name	Project No.	Project Name	Turn Around Time	Due Date
Strategic Analytical	NIC-CM-002	Nichols Residence	Standard	Dec. 16, 1994

Contact Person	Address	City	State	Zip	Telephone
Steve Brackett	As Above				(802)463-0733

Sample I.D	Date	Time	COMP	GRAB	MATRIX	Station Location/Source of Sample	No. of Containers	Analysis Required: 8020 w/ TTBE
NIC-CM-002.1	12/6/94	12:00 PM		✓	W	Monitoring Well #1	2	
002.2	"	12:00		✓	W	Monitoring Well #2	2	
002.3	"	12:00		✓	W	Monitoring Well #3	2	
002.4	"	12:00		✓	W	Monitoring Well #4	2	

Matrix: A-Air C-Compost D-Diluent DW-Drinking Water S-Soil SL-Sludge WW-Wastewater

Sampler Type: Sampler's Signature: Special Conditions:

Special Remarks/Requests
Please fax results as soon as available. Mail hard copy.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	12/6/94				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Strategic Analytical System
PROJECT NAME: Nichols Residence
DATE REPORTED: December 22, 1994
DATE SAMPLED: December 6, 1994

PROJECT CODE: STAS1743
REF. #: 68,938 - 68,941

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody did not indicate sample preservation.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: December 22, 1994
CLIENT: Strategic Analytical Systems
PROJECT: Nichols Residence
PROJECT CODE: STAS1743
COLLECTED BY: Steve Brackett
DATE SAMPLED: December 6, 1994
DATE RECEIVED: December 6, 1994

Reference #	Sample ID	Concentration(mg/L)[1]
68,938	MW #1; 12:00 p.m.	TBQ[2]
68,939	MW #2; 12:00 p.m.	ND[3]
68,940	MW #3; 12:00 p.m.	ND
68,941	MW #4; 12:00 p.m.	ND

Notes:

1 Method detection limit is 0.8 mg/L.
2 Trace below quantitation limit
3 None Detected

Strategic Analytical Systems, Inc.
39 Square - Centennial Building
Bellows Falls, VT 05101
Phone: (802) 463-0733 Fax: (802) 463-0723

[redacted] STAS 1743

CHAIN OF CUSTODY

Page 1 of

Company Name: Strategic Analytical | Project No.: NIC-CT-002 | Project Name: Nichols Residence | Turn Around Time: Standard | Due Date: Dec. 16, 1994

Contact Person: Steve Brackett | Address: As Above

City | State | Zip | Telephone: (802) 463-0733

Sample I.D	Date	Time	COMP	GRAB	MATRIX	Station Location/Source of Sample	No. of Containers	8020 w/ TTBE [redacted]			
NIC-CT-002.1	12/6/94	12:00 PM		✓	W	Monitoring Well #1	2	✓	68938 [redacted]	100	Ø
002.2	"	12:00		✓	W	Monitoring Well #2	2	✓	68939 [redacted]	100	Ø
002.3	"	12:00		✓	W	Monitoring Well #3	2	✓	68940 [redacted]	100	Ø
002.4	"	12:00		✓	W	Monitoring Well #4	2	✓	68941 [redacted]	100	Ø

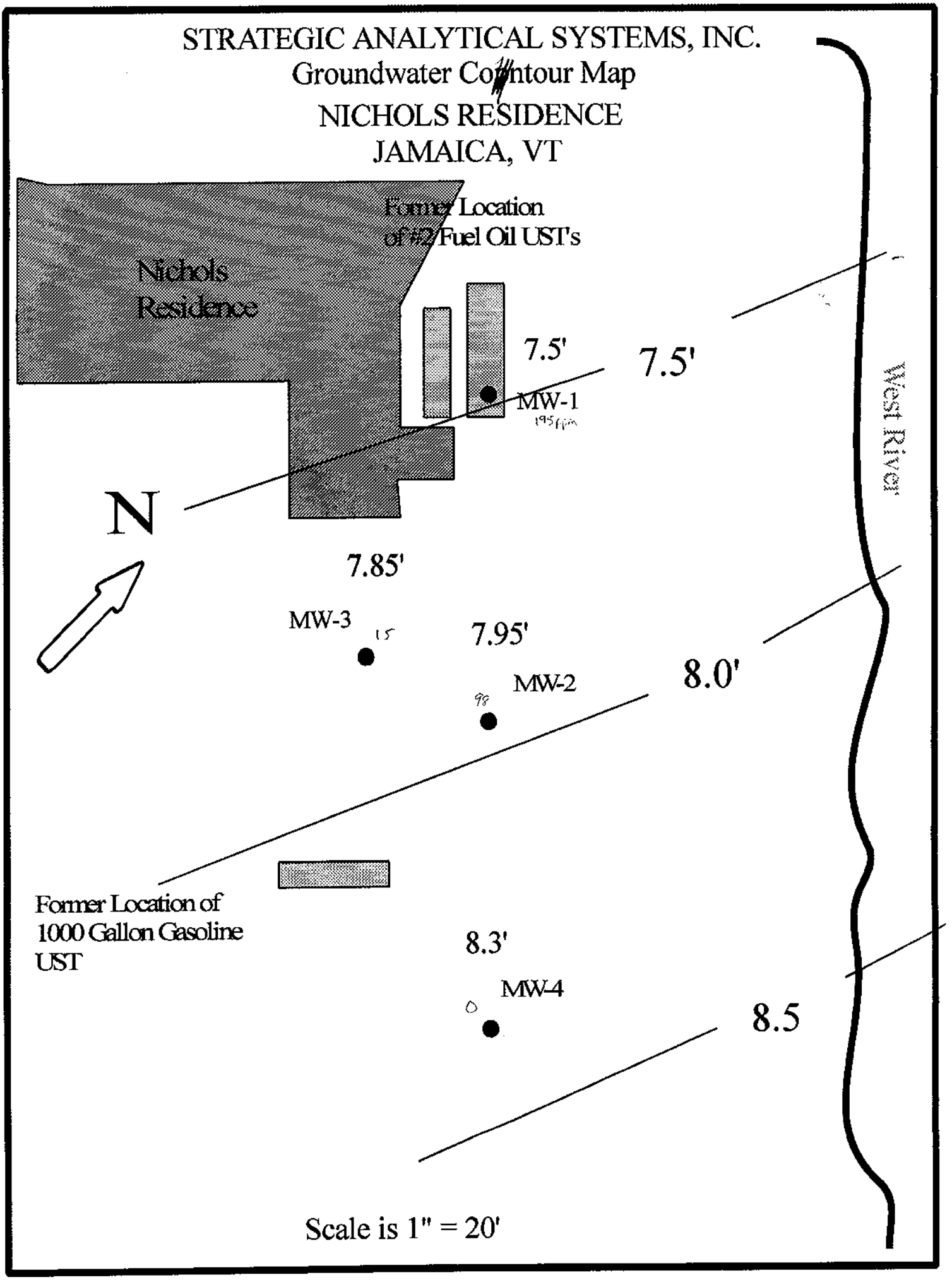
Matrix: A-Air C-Compost D-Diluent DW-Drinking Water S-Soil SL-Sludge WW-Wastev

Sampler Type: Sampler's Signature: Special Conditions:

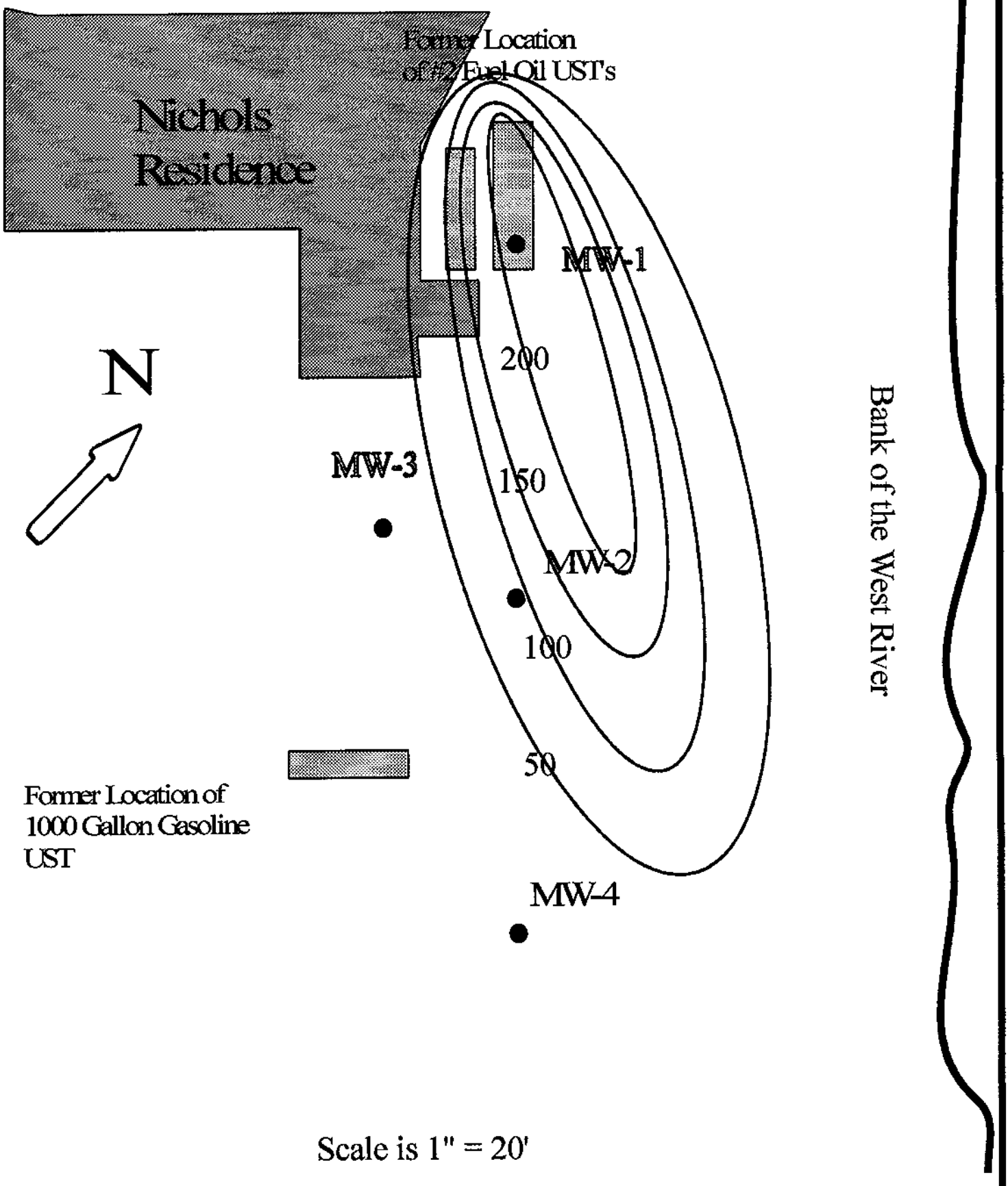
Special Remarks/Requests: Please fax results as soon as available. Mail hard copy.

Relinquished by: (Signature) Date/Time Received by: (Signature) | Relinquished by: (Signature) Date/Time Received by: (Signatur

STRATEGIC ANALYTICAL SYSTEMS, INC.
Groundwater Contour Map
NICHOLS RESIDENCE
JAMAICA, VT



STRATEGIC ANALYTICAL SYSTEMS, INC.
ISOPLETH MAP (VOC's in ppm, By Headspace In Soil)
NICHOLS RESIDENCE
JAMAICA, VT



Scale is 1" = 20'